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The Dope on Marijuana Consumption and Impaired Driving

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THE DOPE ON MARIJUANA CONSUMPTION AND IMPAIRED DRIVING

SAMUEL D. HODGE, JR.* AND LAUREN WILLIAMS**

ABSTRACT

Marijuana is the most frequently used psychotropic drug in the United States, following alcohol consumption. Its use is becoming socially acceptable as more and more states legalize recreational consumption. Nevertheless, marijuana is still a drug, and individuals must understand that it has adverse health effects and potential therapeutic benefits.

Marijuana can influence a user's judgment and impair a person's driving abilities. A significant problem with its consumption and driving is that there is no statistical link to show what level of marijuana in the blood causes impairment. Roadside tests for the appropriate blood alcohol content to show intoxication are well known. No such uniform standard exists for marijuana, however, since the test can show evidence of drug use from days before, even if the individual is not impaired at the time of the incident.

Jurisdictions that permit the use of marijuana have had difficulty creating scientifically logical and criminally relevant laws about drivers who use cannabis lawfully. This dilemma has resulted in three approaches being used to determine drugged driving. They range from the need to show impairment to a per se standard where the person is found guilty of drugged driving if any trace amount of THC is discovered in the blood.

This Article will provide a comprehensive guide to marijuana and its consumption. The drug's components will be explained along with a medical explanation of how marijuana affects the body to produce a "high." It will then focus on the relationship

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between marijuana and impaired driving and explain the different approaches used by the states to establish drugged driving.

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"Hemp is of first necessity to the wealth and protection of the country."
–Thomas Jefferson[1]

I. INTRODUCTION

Milton Pence, a 63-year-old English teacher,[2] has had a bad back for years due to a congenital defect affecting his spine. Two years ago, he underwent a fusion, but it did not remedy the problem. He continued to suffer from debilitating back pain, and Pence's surgeon refused to give him pain medication because of its addictive qualities. Instead, he sent the educator to a pain specialist who placed him in a medical marijuana[3] program. Whenever the teacher has a flare-up of back discomfort, he takes a marijuana tincture, which, according to the product's label, is 5-part THC and 1 part CBD.

Pence recently visited a French restaurant that offered a wine tasting experience along with the meal. He is not sure how much wine he consumed because the glasses were never filled to the top, but the patron tasted eight different spirits from a Chardonnay to Champagne. Milton felt very mellow when he left the establishment but insisted that he was not drunk. On his way home, a deer darted into his car's path, causing him to swerve and strike the vehicle next to him. That other driver lost control of her automobile, careened down an embankment, and struck a cement barrier. In turn, the woman was thrown out of her vehicle and sustained fatal injuries.

Emergency response vehicles arrived at the scene along with officers from Police Accident Investigation. While there was no evidence that Pence was intoxicated or impaired, the police made him submit to a field sobriety test, claiming that this is routine police practice in fatal motor vehicle accidents.[4] The field sobriety test showed his blood/alcohol concentration (BAC) was .072, so the police took him to a nearby hospital for a blood test to obtain a more accurate reading. This screening confirmed the blood/alcohol reading, below the level for legal intoxication, but he was also found to have four nanograms of delta 9-tetrahydrocannabinol per milliliter in his blood. Pence had used prescription marijuana two days earlier because of back discomfort. These findings resulted in his being arrested for driving under the influence of drugs because his state of residence has a zero-tolerance policy for marijuana use while operating a motor vehicle.

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[1] Aidan Lehane, *The Founding Fathers and Hemp*, GREAT HEMP, https://greathemp.net/hemp-and-the-founding-fathers-history-images-and-quotes/ (last visited Aug. 24, 2021).

[2] This is purely a hypothetical case.

[3] Marijuana will also be referred to as cannabis, hemp, plant, and weed throughout the article.

[4] In Pennsylvania, the court has found that performing a breath, urine, or blood test solely because a person has been in a serious death-causing accident is unconstitutional. A blood alcohol test is a search under the Fourth Amendment, and the test is constitutionally valid only if reasonable. Commonwealth v. Danforth, 576 A.2d 1013, 1024 (Pa. Super. Ct. 1990).

This hypothetical illustrates some of the legal issues involved with marijuana consumption and driving. This Article will discuss the use of marijuana in the current era of its social acceptability. It will also examine the legal implications of the drug being detected in a person's system following a traffic stop or motor vehicle accident even though its use is legal under state law.

II. MARIJUANA CONSUMPTION

Historically, alcohol has been identified as the psychoactive drug that is most related to impaired driving. Recently, there has been a shift in focus to other drugs that cause impaired driving, and the accompanying legal and public health implications.[5] Among these substances, marijuana is the most frequently used. Globally, although cannabis consumption is not uniform, some areas, such as North America, describe greater usage rates than others.[6]

Marijuana is the most frequently used psychotropic drug in the United States, following alcohol.[7] In 2018, more than 11.8 million young adults admitted to consuming marijuana during the prior year.[8] According to a recent survey of drug use and attitudes among the country's teenagers, there has been a significant increase in the daily use of marijuana in the younger grades.[9] Cannabis consumption among adults is also on the rise, and its employment as a recreational drug is expected to follow the trend.[10] This surge in acceptance, and the more lenient feelings toward the drug's use, may be partially due to its increased legalization in various parts of the country.[11]

Research reveals that marijuana consumption is increasing in males and females in different age categories. However, it is rising more rapidly in young adults, ages 18 to 29.[12] Almost 35 million Americans are "regular users," or those who enjoy the drug

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[5] Tara Marie Watson & Robert E. Mann, *International Approaches to Driving Under the Influence of Cannabis: A Review of Evidence on Impact*, 169 DRUG AND ALCOHOL DEPENDENCE 148, 148–55 (2016).

[6] *Id.*

[7] *What is the Scope of Marijuana Use in the United States?*, NAT'L INST. ON DRUG ABUSE (July 2020), https://www.drugabuse.gov/publications/research-reports/marijuana/what-scope-marijuana-use-in-united-states.

[8] *Id.*

[9] *Id.*

[10] Cari Nierenberg, *Marijuana's Popularity Among US Adults Continues to Grow. Here's Why*, LIVE SCI. (Aug. 10, 2017), https://www.livescience.com/60094-marijuana-popularity.html.

[11] *Id.*

[12] *Id.*

at least once or twice a month.[13] The primary justifications for this trend are that marijuana helps people relax, relieve pain, have fun, and can help people be more socially interactive.[14] Americans also tend to believe that alcohol use is more of a health danger than recurrent marijuana utilization.[15]

A. History of Marijuana

Humans have a rich history with marijuana use. Most ancient societies did not harvest the plant to get high but used it as herbal medicine.[16] The compound can be traced back to Central Asia before it was introduced into Africa, Europe, and ultimately the Americas. Hemp fiber had multiple applications and was employed to create clothing, paper, sails, and rope.[17] Its seeds were even utilized as food.[18]

The plant has been used for medical purposes since ancient times. The first mention of its utilization can be found in a Chinese medical manual going back to around 2,700 B.C.[19] Chinese folklore notes that its usefulness in remedying rheumatism, gout, malaria, and absent-mindedness was recorded by Emperor Shen Nung, the Father of Chinese Medicine.[20] As its consumption spread to other countries, the plant was celebrated in India as a flower that could "release us from anxiety."[21] Ancient doctors even recommended marijuana for pain mitigation but warned against overuse since it could cause the user to "see devils."[22]

The first mention of cannabis in the Middle East appears between 800 A.D. and 1,000 A.D. The plant's intoxicating powers gained notoriety around this time. Muslims consumed the drug recreationally since the Koran prohibited alcohol use.[23]

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13 Christopher Ingraham, *11 Charts that Show Marijuana has Truly Gone Mainstream*, WASH. POST (Apr. 19, 2017), https://www.washingtonpost.com/news/wonk/wp/2017/04/19/11-charts-that-show-marijuana-has-truly-gone-mainstream/.

14 Nierenberg, *supra* note 10.

15 Ingraham, *supra* note 13.

16 *Marijuana*, HISTORY, https://www.history.com/topics/crime/history-of-marijuana (last updated Oct. 10, 2019).

17 *Id.*

18 *Id.*

19 *History of Marijuana*, NARCONON, https://www.narconon.org/drug-information/marijuana-history.html (last visited Mar. 21, 2021).

20 *Id.*

21 *Id.*

22 *Id.*

23 *Id.*

Hindus enjoyed the plant in a mildly intoxicating beverage known as "bhang," because it healed a litany of maladies, such as sunstroke, digestion, and dysentery.[24]

Marijuana made its way into the western hemisphere in 1545 when the Spaniards brought the plant to Chile for its employment as a fiber.[25] North Americans started to grow cannabis on plantations in the form of hemp to make rope, garments, and paper.[26] In 1619, Virginia required every farmer to produce hemp. The plant was also allowed to be used as legal tender in Pennsylvania, Virginia, and Maryland.[27] In the late nineteenth century, the plant developed into an accepted element in many medicinal items and was marketed openly by pharmacies.[28]

Cannabis had been entwined with color and ethnicity in the United States before the term "marijuana" was even created.[29] There was little governmental oversight of marijuana's use or its intoxicating powers in the United States before the early 1900s.[30] Hemp was primarily viewed as a fiber.[31] The negative connotations associated with weed occurred after the Mexican Revolution of 1910, when Mexican immigrants streamed into the U.S. because of their home country's oppression. Americans were now exposed to the recreational availability of the plant.[32] This development caused an association between the plant and the anxiety about the Spanish-speaking strangers.[33] Campaigns were launched warning against the intruding "Marijuana Menace," and the heinous crimes committed by the Mexicans who consumed it.[34]

Concern was expressed that using the drug for its intoxicating powers would spread to white Americans. Newspapers soon contained references to the Mexican

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[24] *Id.*

[25] *Cannabis, Coco and Poppy: Nature's Addictive Plants*, DRUG ENF'T ADMIN. MUSEUM, https://www.deamuseum.org/ccp/cannabis/history.html (last visited Mar. 21, 2021).

[26] *Id.*

[27] Public Broadcasting Service, *Marijuana Timeline*, FRONTLINE, https://www.pbs.org/wgbh/pages/frontline/shows/dope/etc/cron.html (last visited Mar. 22, 2021).

[28] *Id.*

[29] Matt Thompson, *The Mysterious History Of 'Marijuana'*, NPR (July 22, 2013), https://www.npr.org/sections/codeswitch/2013/07/14/201981025/the-mysterious-history-of-marijuana.

[30] Kevin J. Fandl, *Up in Smoke: International Treaty Obligations and Marijuana Reform in the United States*, 58 AM. BUS. L. J. 163, 166–67 (2021).

[31] *Id.* at 167–68; *see also* Public Broadcasting Service, *supra* note 27.

[32] Public Broadcasting Service, *supra* note 27.

[33] *Id.*

[34] *Id.*

migration and the association of marijuana use with criminal activity.[35] The following is an example of the reported discriminatory rhetoric:

> The political upheaval in Mexico that culminated in the Revolution of 1910 led to a wave of Mexican immigration to states throughout the American Southwest. The prejudices and fears that greeted these peasant immigrants also extended to their traditional means of intoxication: smoking marijuana. Police officers in Texas claimed that marijuana incited violent crimes, aroused a "lust for blood," and gave its users "superhuman strength." Rumors spread that Mexicans were distributing this "killer weed" to unsuspecting American schoolchildren. Sailors and West Indian immigrants brought the practice of smoking marijuana to port cities along the Gulf of Mexico. In New Orleans newspaper articles associated the drug with African-Americans, jazz musicians, prostitutes, and underworld whites. "The Marijuana Menace," as sketched by anti-drug campaigners, was personified by inferior races and social deviants.[36]

Therefore, it is not surprising that most of the prohibitions against the plant's use occurred in the 20th Century.

California was the first state to address the issue when it altered its "poison law" in 1913 to include marijuana along with opiates and cocaine as unlawful for possession.[37] Massachusetts, Maine, Wyoming, Indiana, Utah, and Vermont soon followed suit.[38] By the 1930s, all forty-eight states had passed some kind of marijuana ban.[39] This negative attitude was made worse with a 1936 propaganda movie dubbed "Reefer Madness." The film showed teenagers smoking cannabis for the first time, causing a spiraling sequence of happenings involving hallucination, attempted rape, and murder.[40] Much of the media portrayed cannabis as a gateway drug.[41]

The federal government took an interest in the plant because of the "spectacular accounts of marijuana's harmful effects on its users," and it passed the "Marijuana Tax Act" of 1937.[42] This law did not ban the drug but taxed the plant's sales.[43] Harry Anslinger, the Federal Bureau of Narcotics Commissioner, turned his attention to

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35 Fandl, *supra* note 30, at 168.

36 Eric Schlosser, *Reefer Madness*, ATLANTIC, Aug. 1994.

37 Fandl, *supra* note 30, at 170.

38 *Id.*

39 *Id.*

40 Alyssa Pagano, *The Racist Origins of Marijuana Prohibition*, BUS. INSIDER, https://www.businessinsider.com/racist-origins-marijuana-prohibition-legalization-2018-2 (last visited Nov. 4, 2020).

41 *Id.*

42 Fandl, *supra* note 30, at 171.

43 *Id.* The $100 tax for the transfer of cannabis was expensive for the time and drove the transfers of cannabis to the black market.

marijuana once the era of prohibition ended and pedaled racism and xenophobia against those who used the drug.[44] Without any scientific proof, he advanced the theory that marijuana induced violence.[45] This spin created the perfect storm to turn the American public against the drug. By stressing the Spanish term "marihuana" instead of cannabis, he created a convincing link between the plant and the Mexican immigrants who helped popularize it in this country.[46] Anslinger also created the false narrative that cannabis made African Americans overlook their place in society. He even advanced the notion that jazz was immoral music fashioned by those under the influence of marijuana.[47]

The racist component involving the enactment of the marijuana laws spilled over into the enforcement sector. The discrimination these laws fostered was established in the arrest statistics.[48] The first year following the passage of the Marijuana Tax Act, African Americans were almost three times more probable to be arrested for violating drug laws than Caucasians.[49] Mexicans were almost nine times more likely to be taken into custody for the same offense.[50] Even with the diverse laws prohibiting the drug's use at the state and federal levels, consumption increased around the country between the 1940s and the 1960s.[51] However, concern started to be expressed that the kind of individuals who were using cannabis had shifted toward young white individuals.[52] The bigoted rhetoric that was frequently employed to promote laws aimed at minority groups in prior years became less effective leading into the 1960s.[53] Studies commissioned by Presidents Kennedy and Johnson reported that marijuana consumption did not encourage violence nor cause utilization of stronger drugs. Policies involving cannabis started to include treatment considerations as well as criminal consequences.[54]

The history of cannabis again took a sinister turn when the Controlled Substances Act of 1970 was enacted under President Nixon, making marijuana America's public

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[44] Pagano, *supra* note 40.

[45] *Id.*

[46] *Id.*

[47] *Id.*

[48] *Id.*

[49] *Id.*

[50] *Id.*

[51] Fandl, *supra* note 30, at 172.

[52] *Id.* at 172–73.

[53] *Id.* at 173.

[54] Public Broadcasting Service, *supra* note 27.

enemy number one.[55] This legislation repealed the Marijuana Tax Act and made cannabis a Schedule I drug.[56] This classification is reserved for drugs with a high risk of abuse and addiction with no medical applications.[57] Additional drugs with a Schedule I label are heroin, LSD, and ecstasy.[58]

Marijuana arrests in the United States have skyrocketed since this reclassification. In 2006, there were 829,625 marijuana apprehensions. By the 21st Century, nearly half of all drug charges implicate marijuana.[59] Nevertheless, the listing of marijuana as an illegal drug is highly debated. Some researchers have demonstrated that substantial and prolonged use of marijuana may cause adverse health issues. However, most scientists opine that sporadic marijuana consumption does not result in adverse health consequences for most consumers.[60]

A recent attitude shift has occurred concerning the use of this drug. There is a ground swelling of support for marijuana law reform with polls revealing that more than half of the country wishes to legalize marijuana and regulate it like alcohol and tobacco.[61] Every ballot initiative concerning the decriminalization or legalization of cannabis passed in the 2020 election.[62] For example, New Jersey and Arizona voters approved the legalization of marijuana for adult recreational use.[63] Mississippi ratified its medical use, and South Dakota legalized marijuana for both recreational and medical consumption.[64] At present, 15 states and the District of Columbia allow adult recreational use of marijuana. Thirty-six states, the District of Columbia, Guam, and Puerto Rico permit the plant's medical employment.[65]

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55 Pagano, *supra* note 40.

56 21 U.S.C. § 812(b)(1) (1970).

57 *War on Drugs*, HISTORY, https://www.history.com/topics/crime/the-war-on-drugs (last visited Aug. 4, 2021).

58 *Id.*

59 Katherine Beckett & Steve Herbert, *The Consequences and Costs of Marijuana Prohibition*, UNIV. OF WASH. 8, https://faculty.washington.edu/kbeckett/The%20Consequences%20and%20Costs%20of%20Marijuana%20Prohibition.pdf (last visited Mar. 22, 2021).

60 *Id.*

61 *Marijuana Legalization and Regulation*, DRUG POL'Y, https://drugpolicy.org/issues/marijuana-legalization-and-regulation (last visited Mar. 22, 2021).

62 Charlotte Morabito, *What 2020 Revealed About the Future of Marijuana Legalization in the U.S.*, CNBC (Jan. 6, 2021), https://www.cnbc.com/2021/01/06/marijuana-united-states-law.html.

63 *Id.*

64 *Id.*

65 *Id.*; *State Medical Marijuana Laws*, NAT'L CONF. OF STATE LEGISLATURES, https://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx (last visited Aug. 20, 2021).

The impetus for legalization has been partially premised on the view that cannabis is an innocuous drug, criminal possession prosecution is a waste of time that causes needless detention, and the sale of marijuana provides added tax revenues.[66] The reason for this change is not of great significance. What is important is that the use of marijuana has consequences that affect highway safety and lead to the investigation and disposition of impaired driving crimes.[67]

B. Components of Marijuana

The word "cannabis" is misunderstood by most people. While it is used interchangeably with "marijuana," it has its own scientific meaning.[68] Cannabis is a taxonomic word employed in plant sorting. *Cannabis* L. is the type in which all marijuana-generating florae belong.[69] Cannabis belongs to three plants with psychoactive properties: *Cannabis sativa*, *Cannabis indica*, and *Cannabis ruderalis*.[70] When the flowers of these florae are dried, they become the byproduct of the world's most used drug.[71] Cannabis contains more than 480 ingredients that consist of at least 65 unique chemical structures known as cannabinoids.[72] Experts still do not fully understand what each component does, but they have a fair comprehension of two of them: cannabidiol (CBD) and delta-9-tetrahydrocannabinol (THC).[73] It is common to find cannabis products that contain just CBD, THC, or a combination of both.[74]

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66 Neil E. Axel, *The Legalization of Marijuana and its Impact on Traffic Safety and Impaired Driving*, AM. BAR ASS'N (Apr. 20, 2020), https://www.americanbar.org/groups/criminal_justice/publications/criminal-justice-magazine/2020/spring/the-legalization-marijuana-and-its-impact-traffic-safety-and-impaired-driving/.

67 *Id.*

68 *Investigation and Prosecution of Cannabis-Impaired Driving Cases*, NAT'L TRAFFIC LAW CTR. 8, https://ndaa.org/wp-content/uploads/Investigation-and-Prosecution-of-Cannabis-Impaired-Driving-Cases-Final.pdf (last visited Mar. 22, 2021).

69 *Id.* at 6.

70 Kimberly Holland, *A Quick Take on Cannabis and its Effects*, HEALTHLINE, https://www.healthline.com/health/what-is-cannabis (last updated July 23, 2020).

71 *Id.*

72 *Guess What's in Your Marijuana*, AM. ADDICTION CTR., https://drugabuse.com/blog/guess-whats-in-your-marijuana/. A cannabinoid is a naturally occurring group of closely related elements which include the active compound of cannabis. *Cannabinoid*, OXFORD ENGLISH DICTIONARY (2021).

73 Holland, *supra* note 70.

74 *Id.*

THC is the main active ingredient in marijuana. This element is the psychoactive component located in the leaves, seeds, and flowering parts of the plant.[75] It is also handled in different ways to make items with higher levels of THC. These byproducts can be generated with solvents, and others are made by simple physical removal techniques.[76] Any type of marijuana can be utilized to make it edible.[77] THC makes up to thirty percent of the plant. However, THC is not innately active but rapidly converts from THC acid (THCA) when burned in a cigarette or heated in cooking.[78] Its chemical structure, $C_{21}H_{30}O_2$, is very comparable to its counterpart, CBD.[79] The THC component of marijuana imitates the natural chemical anandamide, which is made in the brain, altering its communication purpose. Instead of the cells of the brain or neurons acting as the communications network, THC fastens to the neurons and changes the process.[80]

Cannabidiol, which is also known as CBD, is the next most well-known part of cannabis. It is a derivative of hemp, a cousin of the marijuana plant. CBD fails to have any psychoactive element that will make a person "high."[81] This compound, taken by itself, is a pain reliever that possesses anti-inflammatory capabilities.[82] While THC produces drowsiness and provides a "high," cannabidiol can augment energy and alleviate THC's effects by decreasing anxiety or stress.[83] The World Health Organization reports that "[i]n humans, CBD exhibits no effects indicative of any abuse or dependence potential . . . . To date, there is no evidence of public health-related problems associated with the use of pure CBD."[84] This component of cannabis provides most of the drug's therapeutic properties, from pain relief to a potential treatment for some forms of epilepsy. However, a great deal of the research on

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75 *Substance Use – Marijuana*, MEDLINEPLUS, https://medlineplus.gov/ency/patientinstructions/000796.htm (last visited Mar. 11, 2021).

76 *Investigation and Prosecution of Cannabis-Impaired Driving Cases*, *supra* note 68, at 10.

77 *Id.*; EUROPEAN MONITORING CENTRE FOR DRUGS AND DRUG ADDICTION AND CANADIAN CENTRE ON SUBSTANCE USE AND ADDICTION, *Cannabis and Driving*, Luxembourg, Publications Office of the European Union (May 2018), Web.

78 *Guess What's in Your Marijuana*, *supra* note 72.

79 Anne Sraders, *What Is THC? Experts Weigh in on Benefits and Effects*, THESTREET (July 31, 2018, 5:31 PM), https://www.thestreet.com/lifestyle/what-is-thc-14655181.

80 *Id.*

81 Peter Grinspoon, *Cannabidiol (CBD) — What We Know and What We Don't*, HARV. HEALTH PUBL'G (Apr. 15, 2020), https://www.health.harvard.edu/blog/cannabidiol-cbd-what-we-know-and-what-we-dont-2018082414476.

82 *Guess What's in Your Marijuana*, *supra* note 72.

83 Sraders, *supra* note 79.

84 Grinspoon, *supra* note 81.

marijuana is in its infancy, so it is premature to say with certainty whether CBD has any medical application for most individuals.[85]

A third part of the plant is Cannabinol, or CBN. This ingredient is one of the more than 100 cannabinoid elements found in marijuana in minute levels. In total, cannabinol makes up less than one percent of the marijuana plant.[86] CBN usually appears as the plant dries, and THC is exposed to air, light, and heat.[87] The medical advantage of CBN is that it can be used as a sleep aid or sedative.[88] It also helps control the immune system, relieve the discomfort and inflammation associated with several disorders—such as arthritis and Crohn's disease[89]—and lower intraocular eye pressure caused by glaucoma.[90]

III. THE IMPLICATIONS OF MARIJUANA ON THE BODY

Weed, grass, Mary Jane, reefer, or pot; regardless of its name, marijuana is a greenish combination of dried and shredded flowers that affects the body in multiple ways.[91] Marijuana can be hand-rolled into joints, smoked in water pipes, brewed into tea, or eaten as a brownie or gummy.[92] Regardless of its name or how it is consumed, marijuana is a drug, and individuals must understand that it has adverse health effects and potential therapeutic benefits.[93] This Part will explore how marijuana interacts with the body and the dangers and advantages the drug presents.

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85 Erin Brodwin, *Products Made with a Component of Marijuana that Doesn't Get You High are Surging in Popularity*, BUS. INSIDER (Apr. 13, 2018, 8:16 AM), https://www.businessinsider.com/what-is-cbd-in-marijuana-2018-2.

86 *What is Cannabinol (CBN)?*, INMED PHARMS., https://www.inmedpharma.com/learn/what-is-cannabinol/ (last visited Mar. 12, 2021).

87 *Id.*

88 *CBN*, CRESCO LABS, https://www.crescolabs.com/cannabinoids/cbn/ (last visited Mar. 20, 2021).

89 *Id.*

90 *Id.*

91 *Marijuana DrugFacts*, NAT'L INST. ON DRUG ABUSE (Dec. 2019), https://www.drugabuse.gov/publications/drugfacts/marijuana.

92 *Id.*

93 Nora Volkow, *Marijuana Research Report, Letter from the Director*, NAT'L INST. ON DRUG ABUSE (July 2020), https://www.drugabuse.gov/publications/research-reports/marijuana/letter-director.

A. The Integration Between Marijuana and the Brain

The laws concerning marijuana use have been relaxed, causing some to believe that smoking the compound carries no risks.[94] Scientific research, however, reveals that this belief is misguided. Marijuana can influence a user's judgment and impair a person's driving abilities.[95] Regular users face the added complication of addiction, diminished mental acuity, and poor academic performance.[96] Consumers frequently explain the pot-smoking experience as being relaxing and laidback, thereby producing a sensation of haziness and light-headedness.[97] The person's pupils may dilate, making colors seem more vivid, and other sensations may be heightened. Subsequently, the person may experience feelings of panic and paranoia.[98]

The logical inquiry is how does marijuana have such an influence on a user's capacity to function? This is a question that scientists have pondered for quite some time.[99] Years of research, however, have finally provided the answer. There is a communication link between the brain and the body known as the endocannabinoid system.[100] This understanding began in the mid-1960s with the identification of THC. Two decades later, researchers pinpointed the locations in the brain and body where marijuana interacts and labeled them cannabinoid (CB) receptors.[101] These conduits exist in large numbers in various brain regions and in smaller degrees in a more pervasive manner. They also facilitate a multitude of the psychoactive effects of cannabinoids.[102]

Scientists then discovered anandamide, the body's neurotransmitters.[103] THC imitates the anandamide actions, causing THC to bind with the cannabinoid receptors, activating the brain's neurons.[104] This functional unit of the brain acts as information messengers. These microscopic cells use electrical stimuli and chemical signals to relay impulses between distinct regions of the brain and between the brain and the

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94 *The Science of Marijuana: How THC Affects the Brain*, SCHOLASTIC, http://headsup.scholastic.com/students/the-science-of-marijuana (last visited Mar. 13, 2021); *see* discussion *supra* Section II.A.

95 *Id.*

96 *Id.*

97 Kevin Bonsor & Nicholas Gerbis, *How Marijuana Works*, HOW STUFF WORKS, https://science.howstuffworks.com/marijuana.htm (last visited Mar. 13, 2021).

98 *Id.*

99 *The Science of Marijuana*, *supra* note 94.

100 *Id.*

101 *Id.*

102 Ken Mackie, *Cannabinoid Receptors: Where They are and What They Do*, 20 (SUPPL. 1) J. OF NEUROENDOCRINOLOGY Apr. 17, 2008, at 10.

103 Bonsor & Gerbis, *supra* note 97.

104 *Id.*

nervous system's remainder.[105] The ability to think, feel, and act would be unattainable without the action of neurons.[106]

This activation process of the neurons causes the adverse effects of marijuana on the mind and body.[107] It occurs because the THC overwhelms the endocannabinoid system. The process prevents the brain's natural chemicals from performing their tasks properly, throwing the entire system off balance.[108] For instance, THC stimulates the portion of the brain that reacts to pleasure, such as food and sex.[109] This instigation causes the brain to secrete dopamine, a chemical that provides a joyful, relaxed feeling.[110] This causes mental and physical activities such as short-term memory, motor coordination, perception, learning, and problem-solving to be affected.[111] In turn, this influences a person's performance at school or work and makes driving dangerous.[112] The process has a long-lasting impact especially in the brain of young adults, so regular marijuana use by children may cause adverse and long-lasting effects on cognitive development. This result places teenagers at a competitive hardship and possibly interferes with their well-being in other ways.[113]

The way marijuana is consumed impacts how the drug affects the body. If a person inhales smoke into the lungs, the ingredients are quickly released into the bloodstream and find their way into the brain and other body systems.[114] The process takes longer if the person eats or drinks marijuana because it must enter the digestive system before being absorbed into the blood.[115] It will generally take at least thirty minutes to an hour to feel the drug's effects if consumed by mouth.[116] Therefore, marijuana edibles

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105 Office of Communications and Public Liaison, *Brain Basics: The Life and Death of a Neuron*, NAT'L INST. OF NEUROLOGICAL DISORDERS AND STROKE, https://www.ninds.nih.gov/Disorders/Patient-Caregiver-Education/Life-and-Death-Neuron (last visited Mar. 12, 2021).

106 *Id.*

107 Bonsor & Gerbis, *supra* note 97.

108 *Id.*

109 *How Pot Affects Your Mind and Body*, WEBMD, https://www.webmd.com/mental-health/addiction/marijuana-use-and-its-effects#1 (last visited Mar. 13, 2021).

110 *Id.*

111 *Id.*

112 Volkow, *supra* note 93.

113 *Id.*

114 Ann Pietrangelo, *The Effects of Cannabis on Your Body*, HEALTHLINE, https://www.healthline.com/health/addiction/marijuana/effects-on-body (last updated Apr. 27, 2021).

115 *Id.*

116 *Marijuana DrugFacts*, *supra* note 91.

increase the risk of a harmful reaction because the THC takes longer to digest and generate a "high." This causes consumers to feel the need to eat more of the product, leading to a harmful result.[117]

B. Disadvantages of Marijuana Use on the Body

Most of the attention involving the effects of marijuana is devoted to the brain. However, the plant's use has a wide range of influences, both physical and mental, on most body systems.[118] Chronic use is connected to the DSM-IV diagnoses of marijuana use disorders. These maladies are connected to cannabis withdrawal, joblessness, personality dysfunction, lawbreaking, other psychiatric disorders, and respiratory problems.[119] For example, smoke impacts the respiratory system by irritating the lungs, causing the same breathing issues as those who smoke tobacco.[120]

Marijuana can impact the circulatory system. It has been shown to elevate the heart rate for up to three hours after use.[121] According to the American Heart Association, the chemicals in cannabis have been connected to an increased risk of heart attack, heart failure, and atrial fibrillation.[122] However, those studies are observational and do not conclusively establish that the elements are the reason for the highlighted risk.[123] THC also stimulates the heart as well as fostering vascular inflammation and oxidative stress.[124] These factors may lead to elevated blood pressure, abnormal heart rhythms, an overall increased risk of stroke, and sudden death.[125]

Cannabis use during pregnancy is associated with lower birth weight and an increased likelihood of both brain and behavioral issues in infants.[126] "Research has shown that pregnant women who use marijuana have a 2.3 times greater risk of stillbirths."[127] Because of the possible link between marijuana and brain development, the American College of Obstetricians and Gynecologists recommends that physicians

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117 *Id.*

118 *Id.*

119 Magdalena Cerdá et al., *Medical Marijuana Laws in 50 States: Investigating the Relationship Between State Legalization of Medical Marijuana and Marijuana Use, Abuse and Dependence*, 120 DRUG AND ALCOHOL DEPENDENCE 22, 22 (2012).

120 *Marijuana DrugFacts*, *supra* note 91.

121 *Id.*

122 Robert L. Page II et al., *Medical Marijuana, Recreational Cannabis, and Cardiovascular Health: A Scientific Statement from the American Heart Association*, 142 CIRCULATION e131, e138 (2020).

123 *Id.*

124 *Id.*

125 *Id.*

126 *Marijuana DrugFacts*, *supra* note 91.

127 Volkow, *supra* note 93.

advise expecting mothers against using the drug while trying to become pregnant, during pregnancy, and breastfeeding.[128]

Cannabis even affects the digestive tract because it has various molecules that bind to THC and related substances.[129] For instance, marijuana can alter the time required for the stomach to empty. It also impacts the esophageal sphincter, which is the muscle that opens and closes to allow food from the esophagus to pass into the stomach.[130] Chronic marijuana consumption modifies the method the molecules react and may cause Cannabinoid Hyperemesis Syndrome (CHS).[131] This condition results in recurrent and severe incidents of vomiting.[132] However, CHS only happens with long-term daily consumption of the drug.[133]

One must not overlook the well-known fact that marijuana increases appetite by causing "the munchies."[134] Research reveals that THC stimulates the endocannabinoid system, a part of the brain that regulates feeding behavior and energy balance.[135] Neurons that generally shut off when consuming food essentially encourage more eating when marijuana is used.[136] In turn, THC increases the discharge of dopamine, which augments the pleasure of eating.[137]

C. The Medical Benefits of Marijuana

Few issues stimulate discussions among physicians, scientists, legislators, researchers, and the public more than medical marijuana.[138] Roughly 85% of Americans favor legalizing medical marijuana, and several million Americans currently use it.[139] Medical marijuana, also known as medical cannabis, references

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128 *Id.*

129 *Cannabinoid Hyperemesis Syndrome*, CEDARS SINAI (Mar. 13, 2021), https://www.cedars-sinai.org/health-library/diseases-and-conditions/c/cannabinoid-hyperemesis-syndrome.html.

130 *Id.*

131 *Id.*

132 *Marijuana DrugFacts*, *supra* note 91.

133 *Id.*

134 Michael Hull, *The Science Behind Munchies, Cannabis and Your Appetite*, EXAMINE, https://examine.com/nutrition/cannabis-munchies/ (last updated Apr. 17, 2019).

135 Lisa Drayer, *Why Does Smoking Pot Give You the Munchies?*, CNN (Apr. 20, 2018, 4:29 AM), https://www.cnn.com/2018/04/20/health/why-weed-causes-munchies-food-drayer.

136 *Id.*

137 *Id.*

138 Peter Grinspoon, *Medical Marijuana*, HARV. MED. SCH.: HARV. HEALTH BLOG (Apr. 10, 2020), https://www.health.harvard.edu/blog/medical-marijuana-2018011513085.

139 *Id.*

derivatives of the cannabis sativa plant employed to alleviate serious and chronic symptoms.[140] Medical marijuana is essentially the same product as recreational cannabis, but it is used for medical reasons.[141] The greatest support for the therapeutic applications of marijuana involves its ability to decrease chronic pain, nausea, vomiting caused by chemotherapy, and spasticity from multiple sclerosis.[142]

The least controversial component of marijuana is CBD because it has no intoxicating elements, so users describe very few, if any, changes in consciousness.[143] However, people report many advantages of CBD use, from easing insomnia, anxiety, spasticity, and pain to helping serious maladies.[144] Dravet Syndrome, a form of childhood epilepsy, is most challenging to control but reacts positively to a CBD-dominant strain of cannabis known as Charlotte's Web.[145]

THC also has documented health benefits in specific formulations. The Food and Drug Administration has approved THC-based medications, in pill form, to treat nausea in those undergoing chemotherapy and to increase appetite in those with AIDS.[146] Depending upon the jurisdiction, medical marijuana may be used for the following conditions:

- Alzheimer's disease
- Amyotrophic lateral sclerosis (ALS)
- HIV/AIDS
- Cancer
- Crohn's disease
- Epilepsy and seizures
- Glaucoma
- Multiple sclerosis and muscle spasms
- Severe and chronic pain
- Severe nausea[147]

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140 *Medical Marijuana*, MAYO CLINIC, (Nov. 27, 2019), https://www.mayoclinic.org/healthy-lifestyle/consumer-health/in-depth/medical-marijuana/art-20137855.

141 *Medical Marijuana FAQ*, WEBMD, https://www.webmd.com/a-to-z-guides/medical-marijuana-faq (last visited Mar. 13, 2021).

142 *Id.*

143 Grinspoon, *supra* note 81.

144 *Id.*

145 *Id.*; Charlotte's Web consists of a high-CBD concertation but low THC hemp strain that was created by the Stanly Brothers to treat and reduce seizures. *Charlotte's Web*, WEEDMAP, https://weedmaps.com/strains/charlottes-web (last visited Mar. 25, 2020).

146 Volkow, *supra* note 93.

147 *Medical Marijuana*, *supra* note 140.

This list should only expand as more research is done on marijuana's medical benefits.[148]

IV. MARIJUANA AND IMPAIRED DRIVING

The popularity of alcohol and cannabis consumption and their link to motor vehicle accidents have resulted in a plethora of research on the correlation between them.[149] Research involving driving following marijuana use has emerged worldwide, and three observations can be advanced.[150] First, the rate of driving after marijuana use has risen in recent times.[151] Second, operating a vehicle after marijuana composition is an issue with the younger population, as compared to adults.[152] Third, in certain groups, the rate of driving after cannabis use equals and is occasionally higher than the rate of drinking and driving.[153] These findings raise serval questions. Does marijuana use affect driving skills? Does it raise the chances of a car accident? What influence does the joint use of alcohol and marijuana have on the probability of a crash? Lastly, what types of laws can be enacted to control or avert driving after marijuana consumption?[154]

A. Link Between Marijuana and Car Accidents

Motor vehicle accidents are the leading cause of death in this country for those under thirty.[155] The correlation of drug use to accidents merits greater attention because of the significant increase in drug abuse.[156] Intoxicated operators are involved in twenty-five percent of motor vehicle fatalities, and many of these collisions include individuals who test positive for marijuana.[157] Because cannabis is the most frequently abused drug, having been sampled by forty percent of the population, the correlation of marijuana utilization to motor vehicle collisions is of great importance

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148 This statement is based upon the authors' opinion.

149 R. Andrew Sewell et al., *The Effect of Cannabis Compared with Alcohol on Driving*, 18 AM. J. ON ADDICTIONS 185, 185 (2009).

150 Mark Asbridge, *Driving After Marijuana Use: The Changing Face of "Impaired" Driving*, 168 [J]AMA PEDIATRICS 602, 602 (2014).

151 *Id.*

152 *Id.*

153 *Id.*

154 *Id.*

155 Sewell et al., *supra* note 149.

156 *Id.*

157 *Id.*

to both governmental units and physicians responsible for advising those with substance-abuse issues.[158]

The National Highway Transportation Safety Administration found that in one quarter of all motor vehicle fatalities, the operator had a blood alcohol level of 0.01g/dL or one-eighth the legal limit or higher.[159] By contrast, accidents by drivers testing positive for cannabis varied from six percent to thirty-two percent.[160] This is important because driving attentiveness, vigilance, perception of time, and speed are all influenced by marijuana.[161] Research has shown that in jurisdictions where recreational marijuana is legal, collision claim frequencies are about three percent greater than without legalization.[162] As noted in *Commonwealth v. Gerhardt*:

> The primary psychoactive substance in marijuana, tetrahydrocannibol (THC), is known to have an impact on several functions of the brain that are relevant to driving ability, including the capacity to divide one's attention and focus on several things at the same time, balance, and the speed of processing information. While not all researchers agree, a significant amount of research has shown that consumption of marijuana can impair the ability to drive.[163]

B. Degree of Marijuana Consumption and Accidents

It is commonly known that alcohol increases the chance of an accident, but the role of marijuana's culpability in motor vehicle collisions and injury is murky at best.[164] Acute cannabis intoxication has been demonstrated to affect motor skills mildly, but this impediment is infrequently severe or long-lasting.[165] This impairment is also less consistent or pronounced than those shown by individuals driving under the influence of alcohol.[166] Experienced marijuana users cultivate a tolerance to many of the cognitive and psychomotor effects linked to acute cannabis intoxication.[167]

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158 *Id.* at 186.

159 *Id.*

160 *Id.*

161 *Id.*

162 Matt Moore, *Closing Quote: Legalized Marijuana Looks Like Bad News for Highway Safety*, INS. J., (Apr. 16, 2018), https://www.insurancejournal.com/magazines/mag-closingquote/2018/04/16/486033.htm.

163 Commonwealth v. Gerhardt, 81 N.E.3d 751, 757 (Mass. 2017).

164 Paul Armentano, *Cannabis and Driving: A Scientific and Rational Review*, NORML, https://norml.org/marijuana/library/cannabis-and-driving-a-scientific-and-rational-review/ (last visited Mar. 12, 2021).

165 *Id.*

166 *Id.*

167 *Id.*

A significant problem with marijuana use and driving is that there is no statistical link to show what level of marijuana in the blood causes impairment. The testing of a driver for alcohol intoxication is well known.[168] No such uniform standard exists for marijuana since the test can show evidence of drug use from days before, even if the individual is not impaired at the time of the incident.[169] THC and its metabolites achieve their highest concentrations within three to ninety minutes. While the metabolites are eliminated from the body through human waste, the elements remain in in the body in low levels much longer.[170] Marijuana can stay in a person's system for days or weeks after consumption.[171] Similar to other drugs, marijuana may be detectable in hair for several months. The drug's window of detection is related to the degree and frequency of consumption.[172] Marijuana may be detected for more than ninety days in those who use the drug daily.[173] Reports from the Mayo Clinic Proceedings show that cannabis can be found in the urine after its last use as follows:

- Urine tests can reveal cannabis in the urine for about 3–30 days following use.
- Saliva tests can be positive for marijuana use for about 24 hours. Some tests have even found the drug for up to 72 hours.
- Hair tests are the most sensitive and can find THC for up to 90 days after consumption. However, this method involves looking at the oil in skin that transfers to hair, so they may intermittently show a false positive.
- Blood tests are limited and can only find THC for 3–4 hours after use.[174]

Furthermore, the Center for Disease Control admits that multiple drugs in a driver's blood makes it harder to ascertain which contributed to the collision.[175]

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168 *See* Buddy T, *How Does Marijuana Affect Driving?*, VERYWELL MIND (last updated Oct. 4, 2020), https://www.verywellmind.com/how-does-marijuana-affect-driving-63533.

169 Armentano, *supra* note 164.

170 Andrea Roth, *The Uneasy Case for Marijuana as Chemical Impairment Under a Science-Based Jurisprudence of Dangerousness*, 103 CAL. L. REV. 841, 885 (2015).

171 *What You Need to Know About Marijuana Use and Driving*, CTRS. FOR DISEASE CONTROL & PREVENTION, https://www.cdc.gov/marijuana/pdf/marijuana-driving-508.pdf (last visited Mar. 12, 2021).

172 Carly Vandergriendt, *How Long Does Weed (Marijuana) Stay in Your System?*, HEALTHLINE (May 6, 2019), https://www.healthline.com/health/how-long-does-weed-stay-in-your-system.

173 *Id.*

174 Zawn Villines, *How Long Can You Detect Marijuana in the Body?*, MED. NEWS TODAY (Jan. 29, 2019), https://www.medicalnewstoday.com/articles/324315.

175 Buddy T, *supra* note 168.

C. Combined Alcohol and Marijuana Use on Driving

Research shows that many people smoke marijuana and drink at the same time.[176] They believe that is a safe way to increase the effects of both drugs.[177] This assumption is wrong and mixing the two can lead to severe health consequences. The most serious risk is alcohol overdose because the mixing of the two dramatically increases the effects of alcohol consumption.[178] Studies demonstrate that when THC is found in the blood of fatally injured operators, alcohol is often found as well.[179]

The effects of driving after consuming both alcohol and cannabis appear to be greater than the use of either drug individually. Research demonstrates that the consequence is additive or possibly synergistic.[180] This is especially noteworthy for operators who use each drug in quantities lower than the legal threshold for impairment. Such individuals may think they are carefully consuming with restraint, but significant impairment is felt when the elements are mixed.[181] Alcohol may also increase THC levels.[182] Compensatory defensive driving practices that are often found in those operating a motor vehicle after using marijuana are nullified when a user mixes alcohol and marijuana.[183] The bottom line is that drivers who consume both alcohol and cannabis at the same time have greater odds of making a mistake behind the wheel than operators who test positive for either alcohol or cannabis alone.[184]

V. LEGAL ISSUES INVOLVING IMPAIRMENT DUE TO MARIJUANA USE

The enforcement of laws prohibiting a vehicle's operation while intoxicated can be traced back to 1906, when the first statute prohibiting impaired or intoxicated driving was passed.[185] These early laws were subjective and only necessitated the

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176 *The Dangers of Mixing Alcohol with Marijuana*, VERTAVA HEALTH, https://vertavahealth.com/polysubstances/alcohol-marijuana/ (last visited Mar. 12, 2021).

177 *Id.*

178 *Id.*

179 *Does Marijuana Impair Driving the Way Alcohol Does?*, DRUG POL'Y ALL., https://drugpolicy.org/does-marijuana-impair-driving-way-alcohol-does (last visited Mar. 12, 2021).

180 Sacha Dubois et al., *The Combined Effects of Alcohol and Cannabis on Driving: Impact on Crash Risk*, 248 FORENSIC SCI. INT'L 94, 99 (2015).

181 Asbridge, *supra* note 150, at 603.

182 *Background on: Marijuana and Impaired Driving*, INS. INFO. INST., https://www.iii.org/article/background-on-marijuana-and-impaired-driving (last updated June 24, 2021).

183 Dubois et al., *supra* note 180 at 95.

184 *Id.* at 99.

185 Michael DeAngelo, *Medical Marijuana and Driving Under the Influence in Pennsylvania*, 92 TEMP. L. REV. 225, 227 (2019).

outward showing of signs of impairment for conviction.[186] Currently, all fifty states have DUI laws that impose a per se standard that makes it illegal to drive a motor vehicle with a BAC of 0.08% or higher.[187]

A. The International Experience

Less than two decades ago, Norway was the only country that had "established any systematic system to detect drugs other than alcohol among drivers suspected to be influenced."[188] Since that time, laws about driving after marijuana consumption have been passed in the United States, Canada, Australia, New Zealand, and various countries in Western Europe.[189]

Most countries that belong to the European Union only test for THC in the blood if the operator is stopped.[190] Sixteen countries in Europe require THC concentrations above zero before the police can charge the operator for driving under the influence. Eleven of these jurisdictions, such as the Nordic states, Greece, Ireland, and Eastern European countries, mandate whole blood testing.[191] The United Kingdom, Belgium, Germany, Luxembourg, and Slovenia mandate the use of blood serum tests while the Netherlands has created thresholds on both THC in blood and blood serum. No country in Europe has set THC limits for urine testing.[192] Australia enacted a statutory scheme that permits law enforcement to arbitrarily stop drivers and test for THC using oral fluid screening.[193]

Committees that have studied the issue in different countries have recommended amounts of 5 ng/ml or more for legal impairment based upon road traffic risks.[194] Nevertheless, levels of THC concentrations used to establish the minimum level for impaired driving are often less than those suggested by these expert panels. For instance, the United Kingdom imposes a 2 ng/ml level for quantification.[195] This

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186 *Id.*

187 *Id.* at 229.

188 Watson & Mann, *supra* note 5, at 150.

189 Asbridge, *supra* note 150, at 603.

190 *A Guide to International Cannabis Driving Laws*, ROYAL QUEEN SEEDS, (Jan. 12, 2018), https://www.royalqueenseeds.com/blog-a-guide-to-international-cannabis-driving-laws-n743.

191 *Id.*

192 *Id.*

193 Watson & Mann, *supra* note 5, at 152.

194 *Cannabis and Driving*, *supra* note 77, at *9.

195 *Id.*

reduced level demonstrates a zero-tolerance policy towards drugged driving with marijuana rather than a correlation to actual impairment.[196]

B. The United States Experience

The United States' laws differ concerning how marijuana-impaired operators are determined.[197] One of the most problematic questions linked to the increased use of legal marijuana is how jurisdictions will control its consumption by drivers.[198] Various states that permit the medical or recreational use of marijuana have had difficulty creating obvious, scientifically logical, and criminally relevant laws about drivers who lawfully use cannabis.[199]

Urine tests are so sensitive they can show use from days or weeks before.[200] Blood tests have similar issues with a smaller window of time but still limit the results to recent use, impairment or intoxication.[201] One study showed that the average time from police dispatch to a blood draw in cases of vehicular homicide and vehicular assault was over two hours.[202] Data revealed that between 42% and 70% of all cannabinoid-positive driving arrests tested below 5 ng/ml THC in the blood. This level is the legal limit in some jurisdictions like Colorado and Washington for driving while impaired.[203] This led to the conclusion that the delay in testing results in many blood tests being unable to confirm that drivers who might have smoked marijuana have THC levels above established legal limits.[204] Scientists are trying to develop an accurate breathalyzer for drugs but, as of 2020, further testing is required to satisfy the court mandates concerning the evidence's admissibility.[205] The device must validly reveal how long before the test was administered, the driver used marijuana, the

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196 *Id.*

197 Asbridge, *supra* note 150, at 603.

198 Zack G. Goldberg, *Potholes: DUI Law in the Budding Marijuana Industry*, 82 BROOK. L. REV. 241, 242 (2016).

199 *Id.*

200 Kevin B. Zeese, DRUG TESTING LEGAL MANUAL § 9:17 (2d ed. 2021).

201 *Id.*

202 Ed Wood et al., *Delays in DUI Blood Testing: Impact on Cannabis DUI Assessments*, 17 TRAFFIC INJ. PREVENTION 105, 105 (2016).

203 *Id.* at 107.

204 *Id.* There are a variety of explanations for delays in blood testing. The confusing conditions of an accident can lead to delays. The first priority of a police officer is to assist the injured, not to collect evidence. Even if no one is hurt, logistics may result in time delays. Next, there is a lack of understanding by some law enforcement officials who don't comprehend the need for a rapid blood draw. Third, the response time in a rural location and the time needed to get to an appropriate site to draw blood may be longer. Finally, if the operator refuses the blood test, there is a delay produced by the need to obtain a search warrant. *Id.*

205 *Id.* at 108.

amount of the drug in an individual's body, and the level corresponding to a driver being impaired or intoxicated.[206]

C. Medical Marijuana

State medical marijuana laws are viewed as a sign of group-level support of the drug's use.[207] These rules can be employed to demonstrate state-level norms on cannabis consumption because, usually, a substantial connection occurs between public opinion and policy decisions.[208] Various reasons have pushed the policy changes seen over the past few decades. These include the increasing expenses related to prosecuting and punishing nonviolent drug offenders and stressed state finances that have instigated lawmakers to search for other tax revenue sources.[209]

The successful transition to decriminalize or legalize marijuana use started with California's medical marijuana law in 1996.[210] This legalization produced a public health and jurisprudential quandary for public officials.[211] Politicians previously analogized marijuana as a drug comparable to alcohol to gain support for its legalization.[212] They are now examining alcohol DWI laws as a foundation for comparable marijuana impairment statutes.[213] However, this assessment lacks any scientific validity.[214]

D. Drug Testing

Legislators and law enforcement officials are starting to understand that urine or blood testing is not the proper method to apply to the laws prohibiting driving under

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206 Zeese, *supra* note 200.

207 Cerdá et al., *supra* note 119, at 22.

208 *Id.*

209 Rosalie Pacula & Rosanna Smart, *Marijuana and Marijuana Legalization*, 13 ANN. REV. CLINICAL PSYCH. 397, 398 (2017).

210 Decriminalization was first defined in 1972 by the Shaffer Commission, and it explained policies that did not define possession for personal use or casual distribution as a crime. The Commission plainly noted that policies that merely reduced the penalties without eliminating the criminal standing of the wrongdoing were not technically decriminalized because they perpetuated the significant social harm of the associated convictions. This difference between rules that merely reduce the consequences and those that truly alter the legal status of the crime is significant, but this distinction it is not generally understood by many scientists assessing even the early policies. *Id.*

211 Roth, *supra* note 170, at 892.

212 Goldberg, *supra* note 198, at 242.

213 *Id.*

214 *Id.*

the influence of marijuana.[215] The drug's distinctive chemical characteristics, especially how its elements react within the human body, make it unlike other intoxicating elements. This is particularly concerning with how impaired driving is measured.[216] For instance, the Michigan Impaired Driving Safety Commission issued a report noting that there is no scientifically accurate level for THC relating to impaired driving, and marijuana's impact upon driving performance differs among users.[217] Levels of THC in the blood can be low when drivers are significantly impaired. Likewise, long-term users of marijuana with high levels of THC in their blood may not be impaired.[218] This led the Commission to recommend "against the establishment of a threshold of delta-9-THC bodily content for determining driving impairment and instead recommends the use of roadside sobriety tests to determine whether a driver is impaired."[219]

Marijuana-impaired driving cases are challenging to handle. A common perception that cannabis users drive more carefully when they are high creates hurdles for prosecuting attorneys to overcome.[220] Most factfinders have consumed alcohol, providing them with a strong guide between alcohol impairment and unsafe driving. The same cannot be said about marijuana and driving.[221] Cannabis intoxication does not create a similar relationship in the minds of judges and juries. Most people do not fully understand how marijuana diminishes a person's driving abilities.[222]

Alcohol is easily absorbed into the blood system through the gastrointestinal system.[223] Different influences such as food may affect this progression.[224] The highest blood alcohol concentration (BAC) is usually reached in about 20 minutes following cessation of drinking. Impairment becomes worse with increased alcohol consumption and lessens with decreased alcohol concentration.[225] The association between intoxication and alcohol use permits the use of BAC to establish a driver's

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215 Zeese, *supra* note 200.

216 Goldberg, *supra* note 198, at 242.

217 Zeese, *supra* note 200.

218 Amy Biolchini, *Michigan Shouldn't Set Legal Limit for Driving While High, Commission Says*, MICH. LIVE, https://www.mlive.com/news/2019/03/michigan-shouldnt-set-legal-limits-for-driving-while-high-commission-says.html (last updated Mar. 26, 2019, 3:00 PM).

219 Zeese, *supra* note 200.

220 *Investigation and Prosecution of Cannabis-Impaired Driving Cases*, *supra* note 68, at 58.

221 *Id.*

222 *Id.*

223 Nicole Aaronson, *Potholes Ahead for Marijuana-Impaired Driving Regulation*, MONDAQ BUS. BRIEFING, https://www.wilsonelser.com/news_and_insights/insights/3062-potholes_ahead_for_marijuana-impaired_driving (last updated Jan. 30, 2018).

224 *Id.*

225 *Id.*

degree of impairment in a dependable and scientifically approved way.[226] After all, people usually respond to alcohol impairment uniformly. They will become impaired at a certain blood-alcohol level, which has been established as 0.08, and drunk driving laws are created to stop people from operating their vehicles above this limit.[227]

While the police can use a breathalyzer or blood test to pinpoint a person's alcohol intoxication level, the same cannot be said for drug impairment.[228] Alcohol dissipates in water while THC dissolves in fat. This distinction causes the marijuana component to be absorbed differently, making it more difficult to relate behavior to impairment.[229] When a person consumes liquor, it disperses through the saliva and breath. The alcohol byproducts evenly infiltrate the lungs and blood.[230] This makes measuring the volume of alcohol in a part of the body, like the brain, predictable. The same is not applicable for marijuana. The peak of drugged driving is not when the THC levels in the blood peak.[231] That highest saturation point does not change consistently premised upon how much THC leaves and arrives in the bodily fluids. THC is fat-soluble, so it easily travels from water environments, like blood, to fatty environments.[232] These fatty tissues react like sponges for THC collection.

Since the brain consists of very fatty substances, you can still detect THC in the brain even if it's no longer measurable in the blood.[233] This means that heavy marijuana users accumulate THC in their body fat so that it may continue filtering out for weeks after the drug was last used.[234] Chronic consumers will also demonstrate a quick loss of THC from their blood after smoking, but they will have a continual amount of THC in the blood even when they're not impaired.[235] Without a chemical test's quantification for driving impairment from marijuana consumption, counsel will be mandated to use a subjective analysis concerning a defendant's observable signs of

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226 *Id.*

227 *See Investigation and Prosecution of Cannabis-Impaired Driving Cases*, *supra* note 68, at 59–60.

228 *See id.*

229 Angus Chen, *Why is it so Hard to Test Whether Drivers are Stoned?*, NPR (Feb. 9, 2016), https://www.npr.org/sections/health-shots/2016/02/09/466147956/why-its-so-hard-to-make-a-solid-test-for-driving-while-stoned#.

230 *Id.*

231 *Id.*

232 *Id.*

233 *Id.*

234 *Id.*

235 *Id.*

impairment unless the state's law establishes a zero-tolerance policy for marijuana use.[236]

E. Effect-Based DUI Laws

The federal government's enforcement endeavors have decreased, partially due to President Obama's directive to reduce enforcement of federal marijuana statutes and the Trump Administration's decision to allow the states to enforce the marijuana laws.[237] However, it remains a Schedule I controlled substance under the Federal Controlled Substances Act.[238] While many jurisdictions have legalized marijuana, the states' criminal laws continue to prohibit the driving of a motor vehicle by anyone under the influence of cannabis.[239] These laws are known as "effect-based DUI laws" because they require the government to prove that an operator consumed marijuana and that use interfered with his or her ability to safely operate a motor vehicle.[240] This means that the prosecution must prove that the operator's psychomotor impairment was caused by the substance used.[241] However, the fact that medical marijuana may be legal in a particular jurisdiction is irrelevant when it comes to impaired driving. For example, Illinois law provides that being enrolled in a medical marijuana program is not a defense to driving under the influence just because the state has a medical marijuana program. As stated:

> The fact that any person charged with violating this Section is or has been legally entitled to use alcohol, cannabis under the Compassionate Use of Medical Cannabis Pilot Program Act, other drug or drugs, or intoxicating compound or compounds, or any combination thereof, shall not constitute a defense against any charge of violating this Section.[242]

F. Zero-Tolerance Laws

Some jurisdictions have moved to a per se or zero-tolerance policy concerning marijuana consumption and driving. These laws establish a violation premised solely on whether cannabinoids or their inert metabolites are present in the driver's blood or urine without regard to any given level of the compound.[243] The justification for this harsh result is that having an illicit drug in the body is morally blameworthy. Likewise, driving while having the drug in one's system is also morally blameworthy, even if

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236 *Investigation and Prosecution of Cannabis-Impaired Driving Cases*, *supra* note 68, at 60.

237 Fandl, *supra* note 30, at 166.

238 DeAngelo, *supra* note 185, at 227.

239 Paul Armentano, *Should Per Se Limits be Imposed for Cannabis? Equating Cannabinoid Blood Concentrations with Actual Driver Impairment: Practical Limitations and Concerns*, 35 HUMBOLDT J. OF SOC. REL. 42, 41–51 (2013).

240 *Id.*

241 *Id.*

242 625 ILL. COMP. STAT. 5/11-501 (2019).

243 Armentano, *supra* note 239.

there is no proof of any impairing effect.[244] After all, marijuana is a Schedule 1 drug. Therefore, criminal punishment for driving with any amount of an illicit drug in the system has a valid penal reason, irrespective of the ability to demonstrate any connection to impairment.[245] This zero-tolerance slant "sends a clear and concise message to those who use illicit drugs, such as cannabis, that this behavior will not be tolerated, especially in connection with driving."[246] The scientific community also admits that the zero-tolerance method bypasses the science requirements to justify a dangerousness-based DUI law.[247]

Under this scenario, the government does not need to prove that the presence of marijuana caused any type of psychomotor impairment.[248] Eleven states currently use the per se standard concerning driving a motor vehicle with drugs in the person's system. These include Arizona, Delaware, Georgia, Indiana, Iowa, Michigan, Oklahoma, Rhode Island, South Dakota, Utah, and Wisconsin, which have a zero-tolerance policy for specified drugs, including THC.[249]

The harsh approach does not seem fair where cannabis is legal, just as a zero-tolerance approach for alcohol does not work. Suppose the use of marijuana is legal in a particular state. Why should a person be criminally penalized for driving with trace amounts of marijuana in their system merely based on the immorality of the drug itself?[250]

Colorado has an unusual twist that uses a reasonable inference standard. When THC is found in an operator's blood in amounts of 5ng/ml or higher, the government is permitted to infer the driver was under the influence of drugs.[251] This type of statute differs from a per se law in that a driver who is charged with DUI may introduce an affirmative defense to demonstrate that regardless of having tested at or above the legal limit, they were not impaired.[252]

G. A Specific Numbers Approach

Some proponents of the legalization of marijuana have thrown caution to the wind and allow "a number--any number--in exchange for the holy grail of treating

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244 Roth, *supra* note 170, at 889.

245 *Id.*

246 *Id.* at 890.

247 *Id.*

248 Armentano, *supra* note 239.

249 *Id.*

250 Roth, *supra* note 170, at 893.

251 *Drugged Driving - Marijuana-Impaired Driving*, NAT'L CONF. OF STATE LEGISLATURES (Jul. 20, 2021), https://www.ncsl.org/research/transportation/drugged-driving-overview.aspx.

252 *Id.*

DUI marijuana like DUI alcohol."[253] For instance, in Washington State, a compromise was struck between those in favor of legalization and law enforcement that led to a ballot initiative that connected decriminalization with a per se THC threshold for DUI marijuana of 5 nanograms per milliliter of whole blood (ng/mL).[254] Several other jurisdictions have enacted criminal laws setting forth per se THC limits for drivers without announcing a punishment concept for their validity beyond merely wanting a set number to combat drugged driving.[255] These jurisdictions include Illinois, Montana, Nevada, Ohio, Pennsylvania, and Washington, which have specific per se limits for tetrahydrocannabinol ranging between 1 nanogram and 5 nanograms.[256]

Several driving while impaired laws talk about the person in control of the motor vehicle. This raises an interesting question beyond the scope of this Article. What will happen with a self-operating vehicle when the occupant is impaired? Driving under the influence charges involve proof that the operator was in "actual physical control" of the car.[257] This contemplates the "steering, navigating, accelerating, decelerating, and stopping a vehicle that is in motion."[258] In a self-propelled vehicle, an occupant is not actively engaged in any of these activities. This simple observation, however, does not answer the question.[259]

People have been convicted of driving under the influence in situations where a person is parked on the side of the road while asleep. If the vehicle's engine is running and the keys are in the ignition, the operator can be charged with a DUI.[260] Therefore, it is foreseeable for a drug-impaired occupant of a self-operating vehicle to be charged with driving under the influence. Likewise, law enforcement has a difficult task demonstrating that an occupant in a self-driving car was in "actual physical control."[261] It is also possible that as this technology develops, these cars will contain a built-in breathalyzer or eye-tracking scanner that will detect whether a person is too impaired to drive.[262]

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253 Roth, *supra* note 170, at 894.

254 *Id.* Blood tests look for THC readings in whole blood and provide the basis for filing charges if the jurisdiction's legal limit is exceeded. Aaronson, *supra* note 223.

255 Roth, *supra* note 170, at 915.

256 *Drugged Driving - Marijuana-Impaired Driving*, *supra* note 251.

257 Richard Parker, *Can You Get a DUI in a Self-Driving Car?*, READWRITE (Oct. 24, 2018), https://readwrite.com/2018/10/24/can-you-get-a-dui-in-a-self-driving-car/.

258 *Id.*

259 *Id.*

260 *Id.*

261 *Id.*

262 Dan Robitzski, *These Self-Driving Cars Won't Let Drunk Drivers Take Control*, FUTURISM (Feb. 28, 2019), https://futurism.com/self-driving-cars-drunk-drivers.

H. A Jurisdictional Analysis

The following is a representative sample of how various states handle driving while impaired due to marijuana use.

1. Arizona

This state passed the Medical Marijuana Act in 2010, which allows the personal use of up to 2.5 ounces of marijuana by patients with a written certification from a physician to lessen symptoms linked to certain conditions such as cancer, glaucoma, AIDS, Crohn's disease, and Hepatitis C.[263] In November of 2020, the citizens of Arizona voted to legalize recreational marijuana despite the state's conservative vent.[264] With the passage of the Smart and Safe Marijuana Act, those over twenty-one may possess up to one ounce of marijuana that contains no more than five grams of cannabis concentrates and grow up to six cannabis plants at their primary residence.[265] However, it is illegal for drivers and passengers to consume cannabis while in a vehicle.[266] Driving under the influence of the drug is also prohibited.[267]

Arizona's criminal law makes it illegal to operate or be in physical control of a vehicle while under the influence of intoxicating liquor, any drug, vapor, or any combination of these products if the person is impaired to the slightest degree.[268] This includes finding cannabis[269] or a metabolite in the person's body. It is not a defense that the operator can legally use the drug under the state's laws.[270]

Since Arizona is a per se jurisdiction, the court was asked in *State ex rel Montgomery v. Harris* to clarify whether a metabolite includes Carboxy-Tetrahydrocannabinol ("Carboxy-THC"), a non-impairing metabolite found in cannabis.[271] This element is inactive and does not cause impairment. It can also stay

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263 *Arizona Marijuana Laws*, FINDLAW, https://statelaws.findlaw.com/arizona-law/arizona-marijuana-laws.html (last updated Feb. 23, 2021).

264 *Arizona?*, WEEDMAPS, https://weedmaps.com/learn/laws-and-regulations/arizona (last updated Jan. 22, 2021).

265 *Id.*

266 *Id.*

267 *Id.*

268 ARIZ. REV. STAT. ANN. § 28-1381 (2019).

269 *Id.*; *Id.* § 13-3401 (2017) ("The resin extracted from any part of a plant of the genus cannabis, and every compound, manufacture, salt, derivative, mixture or preparation of such plant, its seeds or its resin" or "Every compound, manufacture, salt, derivative, mixture or preparation of such resin or tetrahydrocannabinol.").

270 ARIZ. REV. STAT. ANN. § 28-1381 (2019).

271 State *ex rel.* Montgomery v. Harris, 346 P.3d 984, 985 (Ariz. 2014).

in the body for as many as twenty-eight to thirty days after use.[272] The state argued that a metabolite includes any byproduct of marijuana. The operator countered that it should only mean Hydroxy-THC, the part of the metabolism of THC that causes drugged driving.[273] The court found that the state's argument that a metabolite includes *any* byproduct of a drug found in an operator's body absurd.[274] This position would generate criminal reasonability "regardless of how long the metabolite remains in the driver's system or whether it has any impairing effect."[275]

In *State v. Clark*, the court was asked to decide whether being allowed to use medical marijuana is a sufficient defense to the state's driving-while-impaired law that contains a zero policy threshold.[276] The defendant was pulled over because a headlight on his car was out, and his temporary registration card was illegible.[277] After the car stopped, the officer noticed that the driver's eyes were "bloodshot and watery," and his speech was "very . . . lethargic."[278] A field sobriety test revealed several indicators of impairment. These included the driver's inability to keep "his hands to his sides and improper turn" demonstrating an "imbalanced, unsteady gait." He could not walk "heel to toe," and he was not capable of standing still without swaying.[279]

At trial, the defendant claimed he had smoked marijuana the day before but not the day of the arrest. His expert witness testified that the 3.6 nanograms of THC found in the defendant's blood are low, but he could not state whether this value alone was sufficient to determine whether a person would be impaired or not impaired.[280] The court found that sufficient evidence existed to find the defendant guilty. Under the statute, an operator may be convicted of driving while under the influence if he has "marijuana or its impairing metabolite."[281] The medical marijuana law provides an affirmative defense to one charged with driving impaired who can show that he was authorized to use medical marijuana and "that the concentration of marijuana or its impairing metabolite in [his] body was insufficient to cause impairment."[282] It is the defendant's burden of proving this affirmative defense.[283]

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272 *Id.* at 986.

273 *Id.* at 987.

274 *Id.* at 988.

275 *Id.*

276 State v. Clark, 472 P.3d 544, 547 (Ariz. Ct. App. 2020).

277 *Id.*

278 *Id.*

279 *Id.*

280 *Id.* at 547–48.

281 *Id.* at 551.

282 *Id.*

283 *Id.*

The government's toxicologist testified that the defendant's blood contained 3.6 nanograms of THC per milliliter.[284] According to the court, this testimony was sufficient to demonstrate that defendant had marijuana "or its metabolite" in his body, in violation of the impaired driving laws.[285] The expert also noted that the literature supports a finding of impairment at the THC level found in the defendant's blood.[286] According to the impairment statute, violations are not limited to situations in which drivers have a non-impairing amount of drugs in their bodies.[287] This law reflects the legislature's goal to curb the problem of impaired driving. It recognizes that it may be challenging to identify specific drugs in the body with concentrations that definitively establish whether a defendant is impaired.[288] Therefore, the statute does not require the state to establish that the operator is impaired "to the slightest degree."[289] Instead, it merely requires the government to demonstrate that the defendant was driving a vehicle while any amount of the drugs or their impairing metabolites can be found "in the person's body."[290]

2. Georgia

Georgia does not recognize recreational marijuana use, and possession of up to one ounce of the drug is a crime punishable by one year in jail and a fine not to exceed $6,000.[291] Medical marijuana is limited to cannabis oil that contains 5% percent THC.[292] The state's driving under the influence law provides that a person shall not operate or be in control of a moving vehicle while under the influence of any drug to the extent that it is less safe for the person to drive.[293] It is illegal to drive if there is any amount of marijuana or a controlled substance present in the person's blood or urine.[294] However, the driver shall not violate this provision unless that person is

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284 *Id.* at 547.

285 *Id.* at 551.

286 *Id.*

287 Dodson v. McClennen, 361 P.3d 374, 377 (Ariz. 2015).

288 *Id.*

289 *Id.*

290 *Id.* (emphasis omitted).

291 Kim Nunley, *Georgia Marijuana Laws*, MED. MARIJUANA, INC. (Aug. 26, 2019), https://www.medicalmarijuanainc.com/georgia-marijuana-laws/.

292 *Id.*

293 GA. CODE ANN. § 40-6-391 (2021).

294 *Id.*

rendered incapable of driving safely due to using a drug other than alcohol which such person is legally entitled to use.[295]

In *Bowen v. State*, the defendant was charged with a violation of Georgia's statute on the basis that he was impaired as a result of ingesting marijuana.[296] The arresting officer testified that the motorist had red, glassy eyes and red eyelids when pulled over. The defendant admitted to having smoked marijuana earlier that evening.[297] A lab test confirmed that the operator's urine was positive for marijuana.[298] However, the trooper never noted that the defendant's speech was slurred, that he swayed, that he failed a field sobriety test, nor that there was something erratic about his driving.[299] Therefore, this evidence was insufficient to uphold a violation of the statute for being an unsafe driver.[300] The court noted that "the mere fact that a defendant has ingested marijuana is not sufficient to support a conviction because that statute does not prohibit driving after ingesting any quantity of drugs."[301]

Compare this holding with that in *Christian v. State*.[302] The defendant confronted his landlord about the rent for his apartment and demanded its return when he was told to find another place to live. He was also observed smoking marijuana outside the apartment and was told to leave.[303] He threatened to stab the owner, who called the police. The defendant left but returned when the police arrived. He was told to exit his vehicle but drove away.[304] Several police vehicles attempted to pull the defendant over, and after several failed attempts, he finally stopped the car.[305] While the defendant was being arrested, the police noticed a strong odor of marijuana emanating from the vehicle, and the operator's eyes were glazed and dilated.[306] Law enforcement also found marijuana in the car, and a subsequent blood test was positive for the drug.[307]

The defendant was convicted of driving while impaired and appealed that decision. The Appellate Court upheld the conviction and noted that his girlfriend was also in

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295 *Id.*

296 Bowen v. State, 510 S.E.2d 873, 875 (Ga. Ct. App. 1999).

297 *Id.* at 874.

298 *Id.*

299 *Id.* at 875.

300 *Id.*

301 *Id.*

302 Christian v. State, 819 S.E.2d 682, 684 (Ga. Ct. App. 2018).

303 *Id.* at 684–85.

304 *Id.* at 685.

305 *Id.*

306 *Id.*

307 *Id.*

the vehicle at the time of his arrest.[308] She told the police that the defendant had smoked five "blunts" that day.[309] In addition to his physical appearance and positive test results, the evidence revealed that the defendant led police on a low-speed chase, culminating in him being forcibly removed from the vehicle and tasered.[310] When viewed in its entirety, this evidence was sufficient to allow a reasonable factfinder to believe that the defendant was impaired to the extent he was less safe to drive.[311]

3. Pennsylvania

The Pennsylvania legislature passed the Medical Marijuana Act (MMA), finding that "[s]cientific evidence suggests that medical marijuana is one potential therapy that may mitigate suffering in some patients and also enhance the quality of life."[312] Under the law, marijuana is legal for medical use in treating seventeen specified conditions, such as cancer, HIV/AIDS, multiple sclerosis, and epilepsy.[313]

The process of becoming a lawful medical marijuana user is cumbersome. It involves having an approved practitioner recommend marijuana use, certify the patient as having one of the specified medical conditions, and declare the patient is likely to benefit from medical marijuana treatment.[314] Then, the patient must go through an application process to secure a medical marijuana card from the Pennsylvania Department of Health.[315] The card permits the patient to purchase marijuana from an authorized dispensary, and the patient must carry the document with them whenever they have marijuana.[316] The Act limits medical marijuana to pill, oil, topical gel, cream or ointment, vapor, tincture, or liquid forms.[317] Smoking the drug and edible marijuana is prohibited unless the food component aids ingestion of the drug for the medicinal purposes established.[318]

A medical marijuana user is not subject to arrest, prosecution, or penalty while acting per the Act.[319] However, the law does not provide for an exception or guidance

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308 *Id.*

309 *Id.*

310 *Id.*

311 *Id.*

312 2016, April 17, P.L. 84, No. 16, § 102.

313 Medical Marijuana Act § 103.

314 *Id.* § 403.

315 35 Pa. Stat. and Cons. Stat. § 10231.303 (West 2016).

316 *Id.*

317 *Id.*

318 Medical Marijuana Act § 304.

319 *Id.* § 2103.

related to the DUI laws.[320] Further, the MMA specifies that all medical marijuana must be dispensed in a sealed and labeled package that notes the product might impair a person's ability to operate heavy machinery and the THC percentage in the product.[321] Pennsylvania is a per se jurisdiction for drugged driving, but the law establishes a minimum THC concentration threshold in the blood. This level was initially pegged at five nanograms per milliliter but was subsequently reduced to one ng/ml.[322]

Commonwealth v. Yeager addresses the MMA's prohibition of smoking marijuana as a medicinal use method and the effect of that prohibition on reasonable cause for a warrantless search of a car after a traffic stop.[323] The driver maintained that the smell of marijuana should not provide the police with probable cause following a traffic stop because the drug has been legalized for medical use.[324] Because smoking marijuana is not permitted under the law, the court found that the smell of burnt marijuana could still give rise to reasonable suspicion that criminal activity was occurring, since "Yeager could not have produced the odor of burnt marijuana through a use permitted under the MMA."[325] In his concurrence, Judge Stabile of the Pennsylvania Superior Court took the opportunity to underscore the court's position that "[d]riving under the influence, whether of alcohol or controlled substances, endangers and kills lives. Like alcohol, while medical marijuana may now be legal, smoking, vaping, or otherwise ingesting marijuana that contains THC can still impair someone who is operating a vehicle."[326]

In *Commonwealth v. Murray*, a medical marijuana user appealed his conviction for driving under the influence of a controlled substance. He argued that the MMA passage in effect removed marijuana from the classification of a controlled substance.[327] The defendant also asserted that "the legislature intended to create a legal distinction between marijuana and medical marijuana and to provide the latter with a distinct legal status, exemptions, and its users with [protection from prosecution for conduct that would otherwise be subject to criminal sanction]."[328] In upholding the trial judge's decision of impaired driving, the court found that distinguishing between marijuana and medical marijuana was not appropriate because the defendant

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320 DeAngelo, *supra* note 185, at 237.

321 Medical Marijuana Act § 801.

322 *Pennsylvania Drugged Driving*, NORML (2021), https://norml.org/laws/drugged-driving/pennsylvania-drugged-driving/.

323 Commonwealth v. Yaeger, No. 2036 MDA 2019, 2020 Pa. Super. Unpub. LEXIS 3632, at *6 (Pa. Super. Ct. Nov. 19, 2020).

324 *Id.* at *4.

325 *Id.* at *16.

326 *Id.* at *19.

327 Commonwealth v. Murray, No. 316 WDA 2020, 2020 Pa. Super. Unpub. LEXIS 4063, at *4 (Pa. Super. Ct. Dec. 31, 2020).

328 *Id.* at *6.

admitted to procuring the marijuana from an illegal dealer and not a licensed dispensary.[329] The court stated: "our legislature allows for the limited use of medical marijuana under very specific guidelines which, when followed, will not lead to criminal punishment."[330] The motorist did not follow those recommendations. He admitted that he did not legally obtain the drug at an official dispensary.[331] Furthermore, having a valid medical marijuana card did not give the driver the right to obtain marijuana illegally from a person on the street.[332]

In *Commonwealth v. Jones*, the defendant appealed his conviction for driving under the influence.[333] The facts show that Jones' car was stopped by an officer who smelled marijuana and ordered a blood test that revealed the operator had 7.7 nanograms per milliliter of Delta-9-THC and 100 nanograms per milliliter of Delta-9-Carboxy THC in his blood.[334] The defendant raised the following questions on appeal:

> I. Whether a mere odor of marijuana emanating from the inside of a motor vehicle supports a finding of probable cause to arrest for driving under the influence[?]
> II. Whether the blood alcohol results should be suppressed as fruit of the poisonous tree due to an illegal arrest[?][335]

Jones cited several cases which analogized alcohol to marijuana, arguing that since the smell of alcohol by itself is insufficient to warrant a blood test, the same result should apply to the smell of marijuana.[336] The court disagreed. Pennsylvania DUI law differs in its treatment of alcohol and marijuana; alcohol is held to an impairment standard, but marijuana must merely be present at certain levels in a driver's blood to be illegal.[337] A showing of impairment is not necessary.[338] Thus, the court found that the officer smelling burnt marijuana, with the driver as the car's sole occupant, produced enough reasonable suspicion to order the blood test that ultimately convicted the operator.[339]

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329 *Id.* at *11.

330 *Id.*

331 *Id.*

332 *Id.*

333 Commonwealth v. Jones, 121 A.3d 524, 525 (Pa. Super. Ct. 2015).

334 *Id.* at 526.

335 *Id.*

336 *Id.* at 528, n.7.

337 *Id.* at 529.

338 *Id.*

339 *Id.*

4. Nevada

The Nevada Constitution was amended in 2002 to instruct the legislature to enact a law providing for

> the use by a patient, upon advice of his or her physician, of a plant of the genus Cannabis for the treatment or alleviation of cancer; glaucoma; acquired immunodeficiency syndrome; severe, persistent nausea or cachexia resulting from these or other chronic or debilitating medical conditions; epilepsy and other disorders characterized by seizure; multiple sclerosis and other disorders characterized by muscle spasticity; or other conditions approved by law for such treatment.[340]

The legislature eventually acquiesced and enacted a medical marijuana program in 2014. That statute includes language providing that medical marijuana issued by approved dispensaries must include warning label language noting that

> cannabis or cannabis products can impair concentration, coordination and judgment and a person should not operate a motor vehicle while under the influence of cannabis or cannabis products; and…that ingestion of any amount of cannabis or cannabis products before driving may result in criminal prosecution for driving under the influence.[341]

Marijuana is also legal for recreational use by those over the age of twenty-one.[342] However, it remains illegal to consume cannabis in any public space and drive under that drug's influence.[343]

Nevada's impaired driving law prohibits a person from operating or being in physical control of a vehicle with at least two nanograms per milliliter of delta-9-THC in the blood and/or five nanograms per milliliter of the metabolite 11 hydroxy-THC."[344] It is not a defense that the operator is permitted to use marijuana.[345]

In *Delapuente v. Nevada*, the Appellate Court overturned a trial judge's decision allowing the per se law to apply to a driver who was convicted of impaired driving even though he had a medical marijuana card.[346] The court opined that two statutory prongs have to be satisfied as they relate to driving under the influence of marijuana:

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340 *Nevada Medical Marijuana Act, Question 9 (2000)*, BALLOTPEDIA, https://ballotpedia.org/Nevada_Medical_Marijuana_Act,_Question_9_(2000)#cite_note-guide-1 (last visited Aug. 26, 2021).

341 NEV. REV. STAT. ANN § 678B.520 (LexisNexis 2021).

342 *Nevada*, WEEDMAPS, https://wmlearnver2.wmmota.com/laws-and-regulations/nevada (last visited Aug. 26, 2021).

343 *Id.*

344 NEV. REV. STAT. § 484C.110 (2017).

345 *Nevada Drugged Driving*, NORML, https://norml.org/laws/drugged-driving/nevada-drugged-driving/ (last visited Aug. 26, 2021).

346 Delapuente v. Nevada, No. 16 CR 00274 1B, 2017 Nev. Dist. LEXIS 184, at *2 (First Jud. Dist. Ct. of Nev. Aug. 3, 2017).

"(i) [t]he person who uses the substance has not been issued a valid prescription to use the substance, and; (ii) the substance is classified in schedule I or II . . . when it is used."[347]

Because the defendant had a valid prescription for marijuana, the court found that his situation failed to satisfy both prongs of the statutory requirement.[348] Therefore, the application of Nevada's per se impaired driving law was inappropriate.[349] The court cited the legislative history about the legalization of medical marijuana and commented that by legalizing marijuana for medical use, the legislature distinguished between medical users and non-medical consumers.[350] The legislature likened the drug, in a prescription form, to other potentially impairing pharmaceuticals, such as anxiety medication, putting the onus on the user to avoid driving if feeling impaired.[351] In order for a per se conviction to stand, a driver must lack a prescription and have detectable amounts of Schedule 1 or 2 drugs, at or above the law's limit, in his blood.[352]

Byars v. State examined the exigency exception to warrantless searches.[353] In this case, a driver was subjected to a blood test after a police officer suspected he was driving under the influence of marijuana.[354] The facts show that an officer smelled marijuana after pulling the defendant over for speeding and performed field sobriety tests.[355] The officer then informed the driver he would order a blood test, to which the defendant would not consent, but which was performed anyway.[356] The test revealed THC in the bloodstream.[357]

The driver raised several issues on appeal of his conviction. He claimed that the warrantless blood draw violated his Fourth Amendment rights against an unreasonable search and seizure.[358] The State argued that the warrantless search was justified under

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347 *Id.* at *4.

348 *Id.* at *5.

349 *Id.* at *17.

350 *Id.* at *5–16.

351 *Id.* at *15.

352 *Id.* at *3–4.

353 Byars v. State, 336 P.3d 939, 942 (Nev. 2014).

354 *Id.*

355 *Id.*

356 *Id.*

357 *Id.* at 942.

358 *Id.*

exigency circumstances.[359] This exception makes the needs of law enforcement so compelling that a warrantless search is objectively reasonable.[360] The court found that "the natural dissipation of THC from the blood does not create a per se exigency." Instead, a totality of the circumstances approach must be used.[361] The court found that other circumstances should have been considered, such as whether waiting for a warrant would have resulted in losing evidence of intoxication[362] and whether time was a factor since the arresting trooper did not behave in a way that suggested time was critical.[363]

The court concluded that the warrantless search was necessary because of exigent circumstances.[364] It made the distinction between marijuana's slow dissipation from the bloodstream and alcohol.[365] The court referenced *Schmerber v. California*, where the U.S. Supreme Court upheld the constitutionality of the exigency exception where an officer reasonably believed that the delay in securing a warrant would result in the dissipation of alcohol in a driver's blood.[366]

5. Minnesota

Minnesota allows medical marijuana use to treat several qualifying conditions as long as the patient is under a health practitioner's care. It also limits medical marijuana to certain forms of the drug, excluding smoking.[367] Recreational marijuana remains illegal, although possession of small amounts has been decriminalized.[368] The state's drugged-driving law excludes marijuana from its zero-tolerance category for Schedule 1 or 2 substances and imposes an impairment standard for its use, similar to alcohol.[369]

In *State v. Fawcett*, a driver sought to suppress evidence of drugs in her system, arguing that the police officer's warrant did not provide a basis for testing substances other than alcohol.[370] The driver had demonstrated impairment by causing an accident after running a red light. When officers arrived on the scene, they smelled alcohol on

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359 *Id.*

360 *Id.*

361 *Id.* at 944.

362 *Id.*

363 *Id.*

364 *Id.* at 945.

365 *Id.* at 944.

366 *Id.* at 943.

367 Act effective May 30, 2014, ch. 311, § 2, subd. 14, 2014 Minn. Laws (codified at Minn. State. § 152.22).

368 *Minnesota Marijuana Laws*, MED. MARIJUANA, INC., https://www.medicalmarijuanainc.com/minnesota-marijuana-laws/ (last visited Aug. 26, 2021).

369 MINN. STAT. § 169A.20 (2021).

370 State v. Fawcett, 884 N.W.2d 380, 382 (Minn. 2016).

her breath, and she admitted having had three beers earlier in the evening.[371] A police detective applied for a warrant to search her blood for "evidence of the crime of criminal vehicular operation/homicide."[372] However, the affidavit and application for the warrant listed only alcohol.[373] The trial court granted her motion, saying the warrant was limited to alcohol.[374]

The Appeals Court reversed, finding the driver retained no right to privacy over the blood sample.[375] The Supreme Court of Minnesota upheld this determination and applied a totality of circumstances evaluation.[376] It opined that the driver appeared to be under the influence since she had caused an accident, and it was unreasonable to limit the blood testing only to alcohol.[377] The court discarded the argument that the search was "overbroad."[378] The search was limited to substances that could lead to impaired driving.[379]

As in other states, the exclusion of smoked marijuana from Minnesota's medical marijuana law makes it easier for police who note impaired driving in conjunction with the smell of marijuana to find reasonable suspicion of the offense. For example, in *State v. Easterling*, a driver unsuccessfully appealed her DUI conviction. She argued the evidence was insufficient to prove she was impaired by marijuana.[380] The police pulled her over after she nearly caused an accident because of reckless driving.[381] When one of the officers approached the car, the driver rolled her window down, and a plume of smoke with an odor of marijuana exited the vehicle.[382] Following a field sobriety test, the operator was arrested for drugged driving.[383] The court applied the following definition in finding her guilty: "A person is under the

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371 *Id.*

372 *Id.*

373 *Id.* at 383.

374 *Id.*

375 *Id.* at 384.

376 *Id.* at 385.

377 *Id.* at 386.

378 *Id.* at 386–87.

379 *Id.* at 387.

380 State v. Easterling, No. A20-0113, 2020 Minn. App. Unpub. LEXIS 763, at *1 (Minn. Ct. App. Sept. 8, 2020).

381 *Id.* at *3.

382 *Id.*

383 *Id.* at *3–4.

influence of a substance 'when a person does not possess that clearness of intellect and control of himself that he otherwise would have.'"[384]

On appeal, the court used a circumstantial evidence standard to determine if she was guilty of impaired driving.[385] The evidence demonstrated that the defendant's blood revealed tetrahydrocannabinol and its metabolite within two hours of driving, and these are both Schedule 1 controlled substances.[386] The police officer had been trained in sobriety, including the detection of impaired driving.[387] He testified that failing to yield to a vehicle that has the right of way may indicate driving under the influence.[388] Finally, when he approached the defendant's car, a large plume of smoke came out of the vehicle.[389] These circumstances are "clearly consistent with a reasonable inference that Easterling drove while under the influence of marijuana."[390]

6. Massachusetts

Massachusetts permits the recreational use of marijuana and allows a person to possess up to ten ounces of the drug within their home.[391] Citizens are also permitted to have an open container of the drug in their vehicle as long as it is placed in the trunk, a locked glove compartment, or a part of the automobile "not normally occupied by the driver or passenger."[392] The state, however, warns its citizens "[i]t's illegal to drive under the influence of marijuana. If you use, don't get behind the wheel. Instead, use public transportation, ride-shares, or catch a ride with a sober friend."[393]

The limit for driving while intoxicated is pegged at a blood alcohol content of 0.08 percent, but there is no set limit for cannabis. While driving a motor vehicle with any impairment level is illegal, the state requires a showing of impairment for conviction of driving under the influence of marijuana.[394]

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384 *Id.* at *4.

385 *Id.* at *6.

386 *Id.* at *2.

387 *Id.* at *6–7.

388 *Id.* at *7.

389 *Id.*

390 *Id.* at *8.

391 *Marijuana DUI in Massachusetts – What You Need to Know*, THE L. OFFS. OF PAUL MORASKI, https://www.massdefense.com/marijuana-dui-in-massachusetts-what-you-need-to-know/ (last visited Mar. 29, 2021).

392 Nik DeCosta-Klipa, *How will Massachusetts Deal with Marijuana-Impaired Driving?*, BOSTON.COM (June 21, 2018), https://www.boston.com/news/politics/2018/06/21/massachusetts-marijuana-impaired-driving.

393 *Know the Laws: Here's Everything You Need to Know About Marijuana in Massachusetts*, CANNABIS CONTROL COMM'N, https://masscannabiscontrol.com/know-the-laws-2/#laws (last visited Aug. 25, 2021).

394 Commonwealth v. Gerhardt, 81 N.E.3d 751, 757 (Mass. 2017).

In *Commonwealth v. Gerhart*, the court considered the admissibility of field sobriety tests as evidence of impairment when marijuana use is suspected. The court determined that a police officer could testify as to his or her perceptions of a driver—bloodshot eyes, drowsiness, and lack of coordination. They are not permitted to offer an opinion as to whether the driver is under the influence of marijuana.[395] The court recognized that field sobriety tests were developed for use in evaluation impairment by alcohol; there is no scientific consensus on what THC levels may lead to impairment in most people.[396] Therefore, the court concluded that a police officer's observations of a person's behavior in the field are relevant but cannot be seen as scientific evidence for marijuana impairment.[397]

VI. CONCLUSION

Marijuana is the most frequently used psychotropic drug in the United States, following alcohol.[398] Its use among adults is on the rise, and its consumption as a recreational drug is expected to follow the trend.[399] This surge, and the more lenient attitude towards cannabis use, may be partially the result of its legalization in various parts of the country.[400] The motivation for legalization has been partially based on the view that cannabis is a harmless drug. Criminal possession prosecution is a waste of time, and its sale provides added tax revenues.[401] As of November 2020, thirty-six states and four U.S. territories have legalized marijuana for medical use with various conditions.[402]

THC is the chief active ingredient in the drug,[403] and it makes up to thirty percent of the plant.[404] This element is the psychoactive component found in the leaves, seeds,

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395 *Id.* at 754.

396 *Id.*

397 *Id.* at 759.

398 *What is the Scope of Marijuana Use in the United States?*, *supra* note 7.

399 Nierenberg, *supra* note 10.

400 *Id.*

401 Axel, *supra* note 66.

402 *State Medical Marijuana Laws*, NAT'L CONF. OF STATE LEGISLATURES, https://www.ncsl.org/research/health/state-medical-marijuana-laws.aspx (last updated May 18, 2021).

403 *Substance Use – Marijuana*, *supra* note 75.

404 *Guess What's in Your Marijuana*, *supra* note 72.

and flowering parts of the plant.[405] People like the feeling produced by marijuana use, but it must be remembered that the plant is a drug and has adverse health effects.[406]

The correlation of drug use to accidents has garnered much attention.[407] While alcohol increases the risk of motor vehicle collisions, the role of marijuana's culpability in accidents is unclear.[408] Cannabis intoxication has been shown to influence motor skills, but this impediment is usually not long-lasting.[409]

A significant problem with marijuana use and driving is that there is no statistical link to show what level of marijuana in the blood causes impairment. Roadside tests for the appropriate blood alcohol content to show intoxication are well-known.[410] No such uniform standard exists for marijuana since the test can show evidence of drug use from days before, even if the person is not impaired at the time of the incident.[411] Jurisdictions that permit the use of marijuana have had difficulty creating scientifically logical and criminally relevant laws about drivers who use cannabis lawfully.[412] This dilemma has resulted in three approaches being used to determine drugged driving. The first method requires the police to demonstrate that driver's impairment. Other states use a per se standard, meaning that a driver is guilty of DUI if any trace amount of THC is found in the blood. The last test is fashioned after the standard for determining alcohol impairment pegged at a specific level of alcohol in the blood. Those states that use this approach have a minimum THC threshold found in the blood to establish guilt.

There is no consensus as to which approach is best. However, it seems unfair that there is no uniform standard or objective test to verify whether a person is impaired from marijuana use while driving. Scientists are working on a device that will operate similarly to a breathalyzer and provide objective proof of impairment.[413] Law enforcement, drivers, and the administration of justice welcome that day.

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405 *Substance Use – Marijuana*, *supra* note 75.

406 Volkow, *supra* note 93.

407 Sewell et al., *supra* note 149, at *1–2.

408 Armentano, *supra* note 164.

409 *Id.*

410 BUDDY T, *supra* note 168.

411 Armentano, *supra* note 164.

412 Goldberg, *supra* note 198, at 242.

413 Eric Boodman, *Breathalyzers and Brain Caps: Researchers Race to Devise a Roadside Test for Driving While High*, STAT (Jan. 9, 2018), https://www.statnews.com/2018/01/09/marijuana-sobriety-test/.